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The natural and synthetic polymers of the non-lipid origin in gene delivery

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Abstract

© 2016, Human Stem Cell Institute. All rights reserved.For effective transfection of the eukaryotic cells with the complexes of non-viral gene carriers and plasmids it is necessary to run a number of obstacles so as a gene construction could enter a cellular nucleus and function there successfully and long. Chemical structure of a vector has the crucial importance for the targeted complex delivery to the desired organ. At present polymers of the non-lipid origin are more and more used for gene delivery along with the lipid vectors. In the review advantages and imperfections of some classes of these less used vectors are elucidated depending on their modifications and ratio to DNA and route of the delivery. We concluded that the significant advance in a task of obtaining the effective and safe vector for the human non-viral gene delivery has not been observed yet in spite of designing more and more novel variants of the gene carriers and the new kinds of the plasmids.

Keywords

Chitosan, Gene therapy, Polyethylene glycol, Polyethylenimine, Polymers of the non-lipid origin, Polyurethane, Targeted gene delivery, Transfection, Vector